

AMENDMENTS TO THE CLAIMS

The following is a complete, marked up listing of revised claims with a status identifier in parentheses, underlined text indicating insertions, and strikethrough and/or double-bracketed text indicating deletions.

LISTING OF CLAIMS

1. (CURRENTLY AMENDED) A gene encoding a protein that catalyzes biosynthesis of at least one member selected from a group consisting of piperitol and/or sesamin.
2. (CURRENTLY AMENDED) A gene encoding a protein that catalyzes a reaction forming a methylene dioxybridge in at least one member selected from a group consisting of pinosresinol and/or piperitol.
3. (CURRENTLY AMENDED) ~~A~~The gene encoding a protein according to claim ~~1 that catalyzes biosynthesis of piperitol and/or sesamin, wherein:~~
the protein includes at least one amino acid sequence selected from a group consisting
~~and that consists of:~~

(a) ~~an~~ amino acid sequences corresponding to ~~of~~ SEQ ID NOS: 1, 64 and ~~or~~ 78, ~~or~~ and

(b) ~~an~~ amino acid sequences that have~~has~~ been modified by at least one of the
substitution, deletion, insertion, and/~~or~~ addition of one or more amino acids to an amino acid
sequence corresponding to ~~of~~ SEQ ID NO: 1, 64 and ~~or~~ 78.

4. (CURRENTLY AMENDED) ~~A~~ The gene encoding a protein according to claim
3 that catalyzes biosynthesis of piperitol and/or sesamin, wherein the protein includes ~~and~~
~~that consists of~~ an amino acid sequence which is at least 50% homologous to an amino acid
sequence selected from a group consisting of SEQ ID NOS: 1, 64 and ~~or~~ 78.

5. (CURRENTLY AMENDED) A gene including a base sequence ~~of~~ selected
from a group consisting of SEQ ID NOS: 2, 65 and ~~or~~ 79 as an open reading frame region.

6. (ORIGINAL) A protein that catalyzes biosynthesis of at least one of piperitol
and/~~or~~ sesamin, and hybridizing under stringent conditions with a polynucleotide selected
from a group consisting of

(a) ~~a~~ polynucleotides ~~consisting of~~ including a base sequence corresponding to one of
SEQ ID NOS: 2, 65 ~~or~~ and 79,

(b) ~~a~~ polynucleotides encoding a protein ~~consisting of~~ including an amino acid
sequence corresponding to one of SEQ ID NOS: 1, 64 ~~or~~ and 78, ~~or~~ and

(c) ~~a fragments thereof of the polynucleotide (a) or (b).~~

7. (CURRENTLY AMENDED) ~~A~~ The gene as set forth in any one of according to
claims 1, wherein:

~~through 6, which~~ the gene is derived from sesame.

8. (CURRENTLY AMENDED) ~~A~~ The protein encoded by a gene according to
claim as set forth in any one of claims 1 through 7.

9. (CURRENTLY AMENDED) A protein that catalyzes biosynthesis of at least
one of piperitol and/or sesamin; and includes at least one amino acid sequence selected from
a group consisting of

(a) ~~an~~ amino acid sequences corresponding to of SEQ ID NOS: 1, 64 ~~or~~ and 78, ~~or~~
and

(b) ~~an~~ amino acid sequences that have been modified by at least one of the
substitution, deletion, insertion; and/or addition of one or more amino acids ~~of~~ to an amino
acid sequence corresponding to SEQ ID NOS: 1, 64 and ~~or~~ 78.

10. (CURRENTLY AMENDED) An antibody that recognizes a protein according
to as set forth in claim 8 or 9.

11. (CURRENTLY AMENDED) A recombinant expression vector including a gene ~~of any one of~~ according to claims 1 through 7.

12. (CURRENTLY AMENDED) A transformant comprising a recombinant expression vector including a gene ~~of any one of~~ according to claims 1 through 7.

13. (CURRENTLY AMENDED) A producing method of a protein, comprising ~~the steps of:~~

~~incubating or growing~~ producing a transformant ~~of~~ according to claim 12; and

recovering a protein ~~obtaining from the transformant a protein that catalyzes~~

biosynthesis of at least one of piperitol and/or sesamin.

14. (CURRENTLY AMENDED) A transformant according to claim 12, wherein

the transformant comprises a ~~A~~ plant, its offspring, ~~and~~ and portions thereof ~~a tissue of the~~

~~plant and its offspring, into which a gene claims 1 through 7 has been introduced.~~

15. (CURRENTLY AMENDED) A method of producing ~~method~~ at least one of

piperitol and/or sesamin, comprising:

~~the step of using a gene according to any of claims claim 1 through 7, or a protein encoded by such a gene of claim 8 or 9.~~

16. (CURRENTLY AMENDED) A method of producing ~~method of~~ a transformant containing an enhanced ~~large~~ amount of lignan, comprising:

~~the step of using a gene according to claim of any of claims 1 through 7.~~

17. (CURRENTLY AMENDED) A method of producing ~~method of~~ a plant containing an enhanced ~~large~~ amount of at least one of piperitol and/or sesamin, comprising:

~~the step of using a gene according to claim of any of claims 1 through 7.~~

18. (CURRENTLY AMENDED) A method of producing ~~method of~~ a transformant containing a reduced ~~small~~ amount of lignan, comprising:

~~the step of using a gene according to any of claims claim 1 through 7.~~

19. (CURRENTLY AMENDED) A method of producing ~~method of~~ a plant containing a reduced ~~small~~ amount of at least one of piperitol and/or sesamin, comprising:

~~the step of using a gene according to any of claims 1 through 7.~~

20. (CURRENTLY AMENDED) A method of cultivating sesame, comprising:

~~the step of using a gene according to any of claims 1 through 7.~~

21. (CURRENTLY AMENDED) A gene detecting device comprising a

polynucleotide probe that incorporates a base sequence selected from a group consisting of
base sequences corresponding to the gene according to ~~is at least part of a base sequence of a~~
~~gene set forth in any one of claims~~claim 1 through 7 and fractions thereof.

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